The King of Burmah has made special application to be favoured with the holy beast.

AN earthquake took place at Valparaiso in the early part of November (date not given) at 10.5 P.M. The shock was smart, and apparently from E. to W. There was another slighter shock shortly after midnight.

ON Oct. 10 an earthquake was felt at Salvador, also in Central America, at 8.27 A.M. It was slight. Another was felt on the 12th, at 11.36 P.M., lasting nineteen seconds, with a strong shock. After the 12th were two slight shocks, it is to be supposed conforming with those of Nicaragua.

ON Sept. 25 an earthquake was felt at Carrizal Bajo, in North Chile, at 4.3 P.M., preceded by a loud noise.

THREE islands have lately been surveyed by the United States Government in the North Pacific Ocean. They are Ocean Island, in latitude 28° 25′ N., longitude 178° 25′ W. Midway Island, or Brooks Island, in latitude 28° 15′ N., longitude 178° 20′ W.; Pearl and Hermes Islands, latitude 27° 50′ N., and longitude 175° 50′ N. They are all three coral islands, and abound in turtle, and birds were found in great numbers. There is but little guano and not much vegetation.

IN connection with the bad weather in November in the Bay of Bengal, the telegraph lines were on the 10th affected by earth-lines on the east coast of India. At Madras these currents were first noticed at 6 A.M., they abated at 4 P.M., and were strongest in the lines forming a considerable angle with the magnetic meridian. They were also observed in the Madras cable. In Calcutta the currents were noticed at about 3 A.M. and ceased at 2 P.M.

ANCIENT ROCK INSCRIPTIONS IN OHIO [*]

SEVERAL diagrams were presented to the section representing rock sculptures in Ohio, that are presumed to be ancient and to have some significance. The largest is a tracing made by Dr. J. H. Salisbury, of Cleveland, with the assistance of Mrs. Salisbury, from a mural face of conglomerate, near the famous "Black Hand" in Licking County, Ohio. Once there was a space of ten or twelve feet in height, by fifty or sixty feet in length, covered by these inscriptions. Most of them have been obliterated by the recent white settlers.

In 1861, Dr. Salisbury took copies from a space about eight by fifteen feet, by laying a piece of coarse muslin over them, and tracing such as remain uninjured, life size, on the cloth. In this space there are found to be twenty-three characters, most of which are the arrow-head or bird-track character. These are all cut on the edge of the strata, presenting a face nearly vertical, but a little shelving outward, so as to be sheltered from the weather.

Another copy of the remnants of similar inscriptions was taken by Colonel Whittlesey and Mr. J. B. Comstock, in 1869, from the "Turkey Foot Rock," at the rapids of the Maumee, near Perrysburg. These are on a block of limestone, and in the course of the twenty-five past years have been nearly destroyed by the hand of man. What is left was taken by a tracing of the size of nature.

On the surface of a quarry of grindstone grit at Independence, Cuyahoga County, Ohio, a large inscribed surface was uncovered in 1854. Mr. B. Wood, Deacon Bicknell, and other citizens of Independence, secured a block about six feet by four, and built it into the north wall of a stone church they were then building. Colonel Whittlesey presented a reduced sketch, one-fourth size of nature, taken by Dr. Salisbury and Dr. J. M. Lewis, in 1869, which was made perfect by the assistance of a photographer. Some of the figures sculptured on this slab are cut an inch to an inch-and-a-half in the rock, and they were covered by soil a foot to eighteen inches in thickness, on which large trees were growing. Like all of the others, they were made by a sharp-pointed tool like a pick, but as yet no such tool has been found among the relics of the mound-builders or of the Indians. The figures are very curious. Among them is something like a trident, or fish-spear, a serpent, a human hand, and a number of track-like figures, which the people call buffalo-tracks, but which Dr. Salisbury regards as a closer representation of a human foot covered by a shoe-pack or moccasin. Another figure somewhat resembles the section of a bell with its clapper.

Near the west line of Belmont County, Ohio, Mr. James W. Ward, then of Cincinnati, now of New York, in 1859 took a sketch of two large isolated sandstone rocks, on which are groups of figures similar to those already noticed. Here are the bird-track characters, the serpent, the moccasin or buffalo-tracks, and some anomalous figures. These are plainly cut, with a pick, into the surface of the rock, which, like the Independence stone, is substantially imperishable. Here we have also the representation of the human foot, and the foot of a bear. Another figure, which appears to be the foot of some animal with four clumpy toes, Prof. Cope thinks may be the foretrack of a Menopome. One peculiarity of these sculptured human feet is a monstrously enlarged great-toe joint, even greater than is produced by the modern process of shoe-pinching. This has been observed in other ancient carvings of the human foot upon the rocks near St. Louis, Missouri. These feet range in size from seven to fifteen inches in length. Of all these representations, the bear's foot is closest to nature. The bird-track, so called, presents six varieties, some of which are anatomically correct. The human hand is more perfect than the foot.

Dr. Salisbury finds, on comparison of these symbolical figures with the Oriental sign-writing, or hieroglyphical alphabets, that there are many characters in common. Some 800 years before Christ, the Chinese had a bird-track character in their syllable alphabet. The serpent is a symbol so common among the early nations, and has a significance so various, that very little use can be made of it in the comparison.

These inscriptions differ materially from those made by the modern red man. He is unable to read that class of them which appears to be ancient.

Lieut. Whipple has mentioned in the "Government Report of the Pacific Railroad Surveys," an instance of the bird-track character inscribed upon the rocks of Arizona. Prof. Kerr, of North Carolina, states that he has noticed similar characters cut in the rocks of one of the passes of the Black Mountains, at the head of the Tennessee river.

These facts indicate wide-spread universality in the use of this style of inscription, and they indicate something higher than the present symbolical or picture writing of the North American Indians.

SCIENTIFIC SERIALS

Monthly Microscopical Journal, January.—"The markings on the Battledore scales of some of the Lepidoptera." By John Anthony, M.D., &c. In this paper the author contributes the result of his observations on the plumules of *Polyommatus Alexis*, from which he is led to the conclusion that the markings on the ribs of the scales are elevations, very much resembling in shape the vegetable glands on the petal of Anagallis, that is, the elevations have a base, a column, and a rounded head, or capital; the form being very much like that of an ordinary collar-stud. The methods employed during observation are detailed in the paper, which is illustrated by two plates.—"The Nerves of Capillary Vessels and their probable action in health and disease" By Dr. Lionel S. Beale, F.R.S., This paper is divided into two parts, the anatomical investigation, and probable mode of action. The first part, containing the results of anatomical investigation alone, is published in the current number of the journal. The sections of this paper are, "Structure of Capillaries," "Nuclei or Masses of Bioplasm of Capillaries," "Nerve Fibres," "Arrangement of the Nerve Fibres distributed to the Capillaries," "Central Origin and Peripheral Connections of Nerve Fibres distributed to the Capillaries," and the "Method of Demonstration." Such an important contribution to microscopic anatomy could not be abstracted within the limits of this notice with justice to the author and his subject. We therefore commend it to the notice of all interested therein, with the assurance that they will find much matter for reflection.—On a New Micrometric Goniometer Eye-piece for the Microscope. By J. P. Southworth. The eye-piece micrometer here described is obtained by photographic reduction from heavy India-ink lines drawn on a white Bristol board. In the micrometer the lines are $\frac{1}{200}$ of an inch apart, and jet black, whilst the spaces between them are trans-

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[*] Paper read before the American Association for the Advancement of Science, Section of Archæology, by C. Whittlesey. Reprinted from the *American Naturalist*.

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lucent enough to admit of the accurate measurement of the details of minute algæ and fungi to the $\frac{1}{25000}$ of an inch. The goniometer is also described. Both are said to posses advantages not secured before by any instrument. The remaining papers are—Note on Dr. Barnard's Remarks on the Examination of Nobert's Nineteenth Band, by J. J. Woodward, Assist. Surg. U.S. Army; a New Erecting Arrangement, especially designed for use with binocular microscopes, by R. H. Ward, M.D., ; and On the Action of Hydrofluoric Acid on Glass, viewed Microscopically, by H. F. Smith.

OF the *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève* the first part of the twenty-first volume has recently been published. It is chiefly occupied by an admirable memoir on the Orthopterous family Mantidæ by M. Henri de Saussure, forming the third fascicule of his "Mélanges Orthoptérologiques." In this paper the author not only describes a great number of new species, but also discusses the internal classification of the family, and gives tables of the subordinate groups and genera, and the synonymy of nearly all the species, so that his work (including its supplement) is very nearly a monograph of the curious and interesting group of insects which constitutes its subject. A great number of the species described by the author are figured on four beautifully executed plates which accompany the memoir, and these will astonish the non-entomological reader by the variety of curious forms produced by modifications of the same plan of structure.—The other papers in this part consist of descriptions of new or little-known exotic Cryptogamia (Mosses), by M. J. E. Duby, illustrated with four plates; a paper on gelatiniform matter by M. Morin, and a report on the labours of the society by its President, M. Henri de Saussure.

PART II. of the *Bulletin of the Royal Swedish Academy of Sciences* (Ofversigt af Kongl. Vetenskaps Akademiens Förhandlingar) for the present year commences with a paper (in Latin), by Dr. E. Fries, containing a description of *Queletia*, a new genus of Lycoperdaceous Fungi, and of a new species of the genus *Gyromitia*. The characters of the former are illustrated in a plate.—Another botanical paper is a notice of some Algæ from the inland ice of Greenland, by M. S. Berggren. The author describes and figures a peculiar form, which he regards as most approaching the Zygnemaceæ, but as having an unmistakable resemblance to some Desmidiaceæ. — Passing by a rather wide step from Greenland to South Africa, we have Latin descriptions of 226 Caffrarian Curculionidæ, collected by Wahlberg, from the pen of M. O. J. Fahreus. These all belong to Lacordaire's second division of the family.—M. B. Lundgren publishes a notice of the occurrence of amber at Fyllinge, in Halland.—The remaining papers are upon chemical subjects, and include a paper by M. P. T. Cleve on some remarkable isomerisms in organic chemistry; a paper by the same author on the nitrites of some platinum-bases; and one by M. L. F. Wilson on the sulphides of arsenic.

Journal of the Chemical Society, September 1871. Bolas and Groves have continued their researches on carbon tetrabromide, and have obtained some interesting results. In their former paper they mentioned that antimony terbromide could be substituted for iodine in the preparation of the tetrabromide. They now find that bromine will act on carbonic disulphide in the presence of the bromides of the following metals :—bismuth, arsenic, gold, platinum, cadmium, zinc, and nickel; the bromides of iron, tin, phosphorus, and sulphur, however gave very unsatisfactory results. The authors still think the mixture of bromine and iodine the most convenient reagent for the preparation of the tetrabromide. The authors recommend for the recovery of bromine from residues the action of dipotassic dichromate and sulphuric acid.—R. C. Woodcock has examined the action of ammonic chloride on normal and acid salts; he has experimented on the following bodies :—potassic chromate, microsmic salt, trisodic phosphate, dipotassic tartrate, succinate, &c. By the action of ammonic chloride on sodic metaborate the whole of the ammonia is evolved, sodic chloride and metaboric being formed. Borax also yields the whole of the ammonia, sodic chloride and tetrametaborate remaining behind. Both soluble and insoluble chromates yield ammonia when distilled with ammonia salts, an acid chromate being formed; the whole of the ammonia, however, is not evolved, the acid chromate formed at a certain point stopping the evolution of ammonia; if the acid salt be removed by crystallisation, a copious evolution of ammonia again takes place on boiling.—W. Mattieu Williams communicates a short abstract of a paper "On Burnt Iron and Steel." Iron which has been damaged by re-heating is designated "burnt iron;" it is brittle, its fracture being short, displaying the so-called crystalline structure. In all the samples which the author has examined, he has found particles of black oxide of iron diffused in the mass. The oxidation must of course take place after that of the carbon present in the iron. It is found that iron attains its maximum toughness when the carbon is reduced to the lowest possible proportion without the oxidation of the iron commencing. When steel is raised to a yellow or white heat, and is suddenly cooled, it turns brittle. Burnt steel has a coarse, granular fracture, and contains small cavities, technically called "toads' eyes." These are probably due to the sudden cooling of the iron imprisoning the carbonic oxide, which is evolved by the oxidation of the carbon; this oxidation not only takes place at the surface of the mass, but also in the interior, from the fact that certain gases can pass readily through heated iron. This explanation is strengthened by "burnt steel" being cured by welding up these cavities. The remainder of the number is occupied with the abstracts of chemical papers, which extend over seventy-five pages, and are quite up to the usual standard, both in scientific interest and as regards literary merit.

Journal of the Chemical Society, November 1871.—This number does not contain any papers originally communicated to the Society. It is not certainly to the credit of English chemists that this should be the case for two months in succession; the number of English chemists who devote their time to original research seems every year to become smaller; on the Continent, however, the reverse is the case, as is shown by the very large number of abstracts, which are published monthly by the Society. This month about 130 papers are abstracted, which fill 127 pages. Amongst them we notice a remarkable communication by Angström "On the Spectra of Simple Gases." Angström took a tube filled with atmospheric air and gradually exhausted it by a mercurial pump, the spectra being obtained by the use of an induction coil. He states that he observed successively the following spectra: 1st, that of atmospheric air; 2nd, the band spectrum of nitrogen; 3rd, that of carbonic oxide; and 4th, when the rarefaction had reached its limit, the lines of sodium and chlorine. He has also experimented on hydrogen, and concludes that it possesses only one spectrum, that of four lines, which is observed in the spectra of the sun and stars. He believes that the various spectra of hydrogen obtained by Plücker, Frankland and Lockyer, Wöllner, and others, are entirely due to impurities, such as acetylene and sulphur.—An abstract of a paper by Andrews contains a curious fact. A fine tube is half filled with bromine and hermetically sealed; on heating, the bromine becomes opaque, so that the tube appears to be filled with a dark red resin.—Lieben and Rossi continue their researches on the normal alcohols and acids of the methyl series; a review of their results has already appeared in these pages.—Ladenburg contributes another most interesting paper, ' On the reduction products of silica, ether, and some of their derivatives;" these researches are very important, and have opened out quite a new branch of chemical inquiry. He has obtained such bodies as silicium, diethylketonic ether ($SiC_2H_{52}OC_2H_{52}$), silicoheptyl ether ($SiC_2H_{53}OC_2H_5$), and so on.—Another paper of some interest is by Heinrich, "On the Influence of Heat and Light on the Evolution of Oxygen by Water Plants." He experimented on the leaves of the *Hottonia palustris*, which were placed in common water. At a temperature of 2·7° C. in full sunlight no evolution of gas took place, but at 5·6° a regular evolution commenced. The most active formation was at 31°, and at 50° to 56° gas ceased to be formed, but the leaf resumed its activity in cooler water. If the leaves were exposed to a temperature of 60° for ten minutes, their power of decomposing carbonic acid was destroyed.

SOCIETIES AND ACADEMIES

LONDON

Geological Society, December 20, 1871.—Mr. Joseph Prestwich, F.R.S., president, in the chair. Mr. Frederick H. Bowman, F.R.A.S., F.C.S., of Halifax, Yorkshire, and Mr. Thomas Charles Sorby, B.A., F.R.S., of 27, Brunswick Square, W.C., were elected Fellows of the Society. The following communications were read :—1. A Letter from Mr. G. Milner Stephen, F.G.S., to the late Sir Roderick Murchison, dated Sydney, 5th October, 1871, announcing the discovery of a rich auriferous deposit on the banks of the River Bondé, on the N.E. coast of

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